

IN THE CLAIMS:

1. (Currently Amended) A method ~~for reporting a streaming quality, wherein at least one continuous media stream is streamed to a client, and wherein said streaming is controlled by a protocol that is operated between said client and a server, comprising:~~
~~selecting at least one quality metric and a quality metrics class from a pre-defined set of at least two quality metrics classes, and~~
reporting to said server the quality of said a streaming of at least one media stream based on said at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, wherein said reporting of said quality of said streaming is further based on a quality metrics class selected from a pre-defined set of at least two quality metrics classes, and wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame and said selected quality metrics class.
2. (Currently Amended) The method according to claim 1, wherein ~~said selection of~~ said quality metrics class comprises negotiating said quality metrics class between said a client to which said media stream is streamed and said a server to which said quality of said streaming is reported.
3. (Currently Amended) The method according to claim 1, wherein said streaming is controlled by a protocol that ~~said protocol~~ defines a quality metrics class field within at least one protocol data unit, wherein said quality metrics class field is capable of identifying each quality metrics class of said pre-defined set of at least two quality metrics classes.
4. (Previously Presented) The method according to claim 3, wherein said quality metrics class field is located in a header section of said at least one protocol data unit.

5. (Cancelled)

6. (Cancelled)

7. (Currently Amended) The method according to claim ~~6~~1, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding an earlier of

a completely received I-frame of said at least one ~~continuous~~ media

stream or

an N-th completely received frame of said at least one ~~continuous~~ media

stream after a last frame error or loss

to be a good frame, wherein ~~then~~N is an integer that is either

signalled or defaults to ∞ in case of a video frame or

1 in case of an audio frame, and

deciding a frame of said at least one ~~continuous~~ media stream following a good frame to be a good frame, if said frame is completely received, and said frame and all subsequent frames until the next good frame to be corrupted, otherwise.

8. (Currently Amended) The method according to claim ~~6~~1, wherein said set of rules defined by at least one of said quality metric classes comprises:

deciding a coded frame of said at least one ~~continuous~~ media stream to be a good frame according to an error tracking algorithm.

9. (Currently Amended) The method according to claim 8, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding an intra-coded frame of said at least one ~~continuous~~ media stream to be a good frame, if it is completely received ~~at said client~~, and to be a corrupted frame otherwise, or

deciding a predictively coded frame of said at least one ~~continuous~~ media stream to be a good frame, if it is completely received ~~at said client~~ and if all ~~its~~of prediction

reference samples of said predictively coded frame belong to good frames, and to be a corrupted frame otherwise.

10. (Currently Amended) The method according to claim ~~6~~1, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding a coded frame of said at least one ~~continuous~~ media stream to be a good frame according to a decoding quality evaluation algorithm.

11. (Currently Amended) The method according to claim 10, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding an intra-coded frame of said at least one ~~continuous~~ media stream to be a good frame, if it is completely received ~~at said client~~, and to be a corrupted frame otherwise, or

deciding a predictively coded frame of said at least one ~~continuous~~ media stream to be a good frame, if it is completely received ~~at said client~~ and all prediction reference samples of said predictively coded frame belong to good frames,
or

if at least a part of said frame is completely received, all of prediction reference samples of said completely received parts of said frame belong to good frames, and all of concealed parts of said frame are considered as good, wherein said concealed parts of said frame are obtained by applying an error concealment algorithm to lost or erroneous parts of a decoded version of said frame, and wherein said concealed parts are considered as good if an average boundary difference between said concealed parts and surrounding completely received and decoded parts of said frame is below a threshold.

12. (Currently Amended) The method according to claim 1, wherein said streaming is controlled by a protocol that said protocol is a real-time streaming protocol in combination with a session description protocol in the context of a packet-switched streaming service of a third generation mobile communications system.

13. (Previously Presented) The method according to claim 12, wherein said session description protocol comprises at least one session description protocol attribute that defines at least one quality metrics class field, wherein said quality metrics class field is capable of identifying each quality metrics class of said pre-defined set of at least two quality metrics classes.
14. (Currently Amended) The method according to claim 13, wherein said real-time streaming protocol is used to negotiate a quality metrics class between ~~said a client to~~ which said media stream is streamed and ~~said a server to which said quality of said~~ streaming is reported at least partially based on said session description protocol attribute.
15. (Previously Presented) The method according to claim 14, wherein said real-time streaming protocol uses a DESCRIBE method for said negotiation.
16. (Cancelled)
17. (Currently Amended) A non-transitory computer readable storage medium~~program product~~ comprising a computer program with instructions operable to cause a processor to report a quality of a streaming of at least one media stream based on at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, wherein said reporting of said quality of said streaming is further based on a quality metrics class selected from a pre-defined set of at least two quality metrics classes, and wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame~~perform the method of claim 1.~~
18. (Currently Amended) A streaming system, comprising:
at least one client, and
at least one server,

wherein at least one ~~continuous~~ media stream is streamed to said at least one client, ~~and~~
wherein said streaming is controlled by a protocol that is operated between said at least
one client and said at least one server, ~~wherein at least one quality metric and a quality~~
~~metrics class from a pre-defined set of at least two quality metrics classes are selected,~~
and wherein ~~the~~ a quality of said streaming is reported to said at least one server based on
said at least one selected quality metric, wherein said at least one selected quality metric
is a quality of experience metric that is at least partially based on a decision whether at
least one frame of said at least one media stream is a good frame, wherein said reporting
of said quality of said streaming is further based on a quality metrics class selected from a
pre-defined set of at least two quality metrics classes, and wherein each quality metrics
class in said pre-defined set of at least two quality metrics classes defines a different set
of rules on how to decide whether a frame of said at least one media stream is a good
frame and said selected quality metrics class is reported to said at least one server.

19. (Currently Amended) ~~An apparatus client in a streaming system, comprising:~~
~~means for operating a protocol that controls a streaming of at least one continuous~~
~~media stream to said client,~~
~~means for selecting at least one quality metric and a quality metrics class from a~~
~~pre-defined set of at least two quality metrics classes, and~~
~~means for reporting the~~ a transmitter configured to report a quality of said a
streaming of at least one media stream based on said at least one selected quality metric,
wherein said at least one selected quality metric is a quality of experience metric that is
at least partially based on a decision whether at least one frame of said at least one media
stream is a good frame, and said transmitter configured to report said quality of said
streaming further based on a quality metrics class selected from a pre-defined set of at
least two quality metrics classes, wherein each quality metrics class in said pre-defined
set of at least two quality metrics classes defines a different set of rules on how to decide
whether a frame of said at least one media stream is a good frame and said selected
quality metrics class to a server.

20. (Currently Amended) ~~An apparatus server in a streaming system, comprising:~~

~~means for operating a protocol that controls a streaming of at least one continuous media stream to a client,~~

~~means for selecting at least one quality metric and a quality metrics class from a pre-defined set of at least two quality metrics classes, and~~

~~means for receiving a receiver configured to receive a reported quality of said a streaming of at least one media stream from said client, wherein said quality is reported based on said at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, said quality of said streaming further reported based on a quality metrics class selected from a pre-defined set of at least two quality metrics classes, wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame and said selected quality metrics class.~~

21. (Cancelled)

22. (Currently Amended) An apparatus, comprising:

a streaming quality monitor for configured to monitoring a quality of a streaming of at least one media stream application according to at least one quality metric and a quality metrics class; and

a real-time streaming protocol entity for operating a protocol for controlling at least one continuous media stream of said streaming application, for selecting configured to select said at least one quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, and configured to select said quality metrics class from a pre-defined set of at least two quality metrics classes, wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame, and for reporting configured to report the said quality of

said streaming of said at least one media stream based on said at least one selected quality metric and said selected quality metrics class.

23. (Currently Amended) An apparatus, comprising:

a quality data processing instance for evaluation and analysis ~~for configured to~~ improving quality of a streaming application by enhancing a data rate of the application depending upon frequency of re-buffering events; and

a real-time streaming protocol entity ~~for operating a protocol that controls a streaming of at least one continuous media stream, for selection at least one quality metric and a quality metrics class from a pre-defined set of at least two quality metrics classes, and for configured to receive~~ing a reported quality of ~~said a streaming of at least one media stream, wherein~~ said quality is reported based on said at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, said quality of said streaming further reported based on a quality metrics class selected from a pre-defined set of at least two quality metrics classes, wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame and said selected quality metrics class.

24. (New) A method, comprising:

receiving a reported quality of a streaming of at least one media stream said quality reported based on at least one selected quality metric, wherein said at least one selected quality metric is a quality of experience metric that is at least partially based on a decision whether at least one frame of said at least one media stream is a good frame, said quality of said streaming further reported based on a quality metrics class selected from a pre-defined set of at least two quality metrics classes, wherein each quality metrics class in said pre-defined set of at least two quality metrics classes defines a different set of rules on how to decide whether a frame of said at least one media stream is a good frame.

25. (New) The apparatus according to claim 19, wherein selection of said quality metrics class comprises negotiating said quality metrics class between a client to which said media stream is streamed and a server to which said quality of said streaming is reported.

26. (New) The apparatus according to claim 19, wherein said streaming is controlled by a protocol that defines a quality metrics class field within at least one protocol data unit, wherein said quality metrics class field is capable of identifying each quality metrics class of said pre-defined set of at least two quality metrics classes.

27. (New) The apparatus according to claim 26, wherein said quality metrics class field is located in a header section of said at least one protocol data unit.

28. (New) The apparatus according to claim 19, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding an earlier of

a completely received I-frame of said at least one media stream or

an N-th completely received frame of said at least one media stream after

a last frame error or loss

to be a good frame, wherein N is an integer that is either

signalled or defaults to ∞ in case of a video frame or

1 in case of an audio frame, and

deciding a frame of said at least one media stream following a good frame to be a good frame, if said frame is completely received, and said frame and all subsequent frames until the next good frame to be corrupted, otherwise.

29. (New) The apparatus according to claim 19, wherein said set of rules defined by at least one of said quality metric classes comprises:

deciding a coded frame of said at least one media stream to be a good frame according to an error tracking algorithm.

30. (New) The apparatus according to claim 29, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding an intra-coded frame of said at least one media stream to be a good frame, if it is completely received at said apparatus, and to be a corrupted frame otherwise, or

deciding a predictively coded frame of said at least one media stream to be a good frame, if it is completely received at said apparatus and if all of prediction reference samples of said predictively coded frame belong to good frames, and to be a corrupted frame otherwise.

31. (New) The apparatus according to claim 19, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding a coded frame of said at least one media stream to be a good frame according to a decoding quality evaluation algorithm.

32. (New) The apparatus according to claim 31, wherein said set of rules defined by at least one of said quality metrics classes comprises:

deciding an intra-coded frame of said at least one media stream to be a good frame, if it is completely received at said apparatus, and to be a corrupted frame otherwise, or

deciding a predictively coded frame of said at least one media stream to be a good frame, if it is completely received at said apparatus and all prediction reference samples of said predictively coded frame belong to good frames,

or

if at least a part of said frame is completely received, all of prediction reference samples of said completely received parts of said frame belong to good frames, and all of concealed parts of said frame are considered as good, wherein said concealed parts of said frame are obtained by applying an error concealment algorithm to lost or erroneous parts of a decoded version of said frame, and wherein said concealed parts are considered as good if an average boundary difference between said concealed parts and surrounding completely received and decoded parts of said frame is below a threshold.

33. (New) The apparatus according to claim 19, wherein said streaming is controlled by a protocol that is a real-time streaming protocol in combination with a session description protocol in the context of a packet-switched streaming service of a third generation mobile communications system.

34. (New) The apparatus according to claim 33, wherein said session description protocol comprises at least one session description protocol attribute that defines at least one quality metrics class field, wherein said quality metrics class field is capable of identifying each quality metrics class of said pre-defined set of at least two quality metrics classes.

35. (New) The apparatus according to claim 34, wherein said real-time streaming protocol is used to negotiate a quality metrics class at least partially based on said session description protocol attribute.

36. (New) The apparatus according to claim 35, wherein said real-time streaming protocol uses a DESCRIBE method for said negotiation.

37. (New) The apparatus according to claim 19, wherein said apparatus is a client to which said media stream is streamed, wherein said streaming is controlled by a protocol operated between said client and a server, and wherein said quality of said streaming is reported to said server.

38. (New) The apparatus according to claim 19, wherein said media stream is a continuous media stream.

39. (New) The apparatus according to claim 20, wherein said apparatus is a server, wherein said at least one media stream is streamed to a client, wherein said streaming is controlled by a protocol operated between said client and said server, and wherein said quality of said streaming is reported to said server.

40. (New) The method according to claim 1, wherein said at least one media stream is streamed to a client, wherein said streaming is controlled by a protocol operated between said client and a server, and wherein said quality of said streaming is reported to said server.

41. (New) The method according to claim 24, wherein said at least one media stream is streamed to a client, wherein said streaming is controlled by a protocol operated between said client and a server, and wherein said quality of said streaming is reported to said server.